Waning! 1-2-3-4-5-6-7-8-11-12
Library

THE PLANT DISEASE REPORTER

Issued By

THE PLANT DISEASE SURVEY

LIBRARY
CURRENT SERIAL RECORD
AUG 26 1949
U.S. DEPARTMENT OF AGRICULTURE

Division of Mycology and Disease Survey
BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING
AGRICULTURAL RESEARCH ADMINISTRATION
UNITED STATES DEPARTMENT OF AGRICULTURE

Volume 33 Number 8

August 15, 1949

The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

THE PLANT DISEASE REPORTER

Issued by

THE PLANT DISEASE SURVEY
DIVISION OF MYCOLOGY AND DISEASE SURVEY

Plant Industry Station — Beltsville, Maryland
Volume 33 — August 15, 1949 — Number 8

IN THIS ISSUE

Decrease in damage from root-knot in cotton following alfalfa is partly attributable to host specialization in nematode populations, according to Harold W. Reynolds, reporting tests in Arizona, page 306.

D. D. Morey and J. H. Miller report that Ascochyta blight of cotton has been widespread in Georgia this year, page 310; a survey to determine its incidence showed striking control obtained by rotation.

Tests reported by M. C. Goldsworthy, J. C. Dunegan, and R. A. Wilson indicate that eradicant fungicides applied in two steps give promise of simplifying control of apple scab, page 312.

Very favorable results were obtained from sodium hypochlorite applied as a spray for the control of peach bacterial spot and brown rot in Arkansas, according to Curtis L. Mason, who suggests that this material may have wide use in the control of plant diseases; page 319.

The Italian pathologist Raffaele Ciferri asks for help in determining cause and control of a destructive pear disease in Italy, page 320.

Diseases affecting cruciferous crops in some Florida sections this season are reported by A. H. Eddins and Stanley R. Burrell, page 322.

E. S. Luttrell reports occurrence of horse-chestnut anthracnose in Missouri, page 324.

Glenn G. Hahn reports susceptibility to blight in some junipers previously thought to be resistant, page 328.

Brief Notes, page 331, contain reports by E. M. Hildebrand on sesame seedling blight in Texas, by Arnold J. Ullstrup on Pythium stalk rot of corn in Indiana, by George B. Cummins on oak wilt in Indiana, and corrections.

June weather, page 333.

RELATIVE DEGREE OF INFECTION OF AMERICAN-EGYPTIAN AND UPLAND COTTON BY THREE POPULATIONS OF THE ROOT-KNOT NEMATODE[1]

Harold W. Reynolds

INTRODUCTION

In order to maintain soil fertility at a high enough level for good cotton yields, growers in Arizona ordinarily rotate cotton land with alfalfa. In addition to increased cotton yields following alfalfa, a marked decrease in damage from the root-knot nematode Heterodera marioni, especially during the first year, has been reported. This may be attributed in part to the fact that the nematode is distributed to greater soil depths because of the deep rooting habit of the alfalfa plant. Consequently with a more shallow rooted crop like cotton following alfalfa, the roots do not immediately penetrate the deeper soil layers which contain large numbers of the parasite, and thus escape damage for all, or at least part, of the growing season.

While these factors may play a part in this observed decrease in root-knot damage, the matter of host specialization of the root-knot nematode may also play an important role. Several investigators have made observations and conducted experiments which show quite conclusively that certain root-knot populations have a preference for a particular plant or group of plants, yet will invade and reproduce in other plants at such a low rate that the population is barely maintained. Sherbakoff (3) reported root-knot damage to upland cotton varieties grown on land previously planted to cotton, but observed no injury to upland cotton grown on land previously planted to tomatoes even though the tomatoes had been severely injured by the disease. He suggested, as a working hypothesis, "that the host specialization of the nemas is due primarily to the segregation and survival of favored genetic races." Christie (1) from greenhouse tests reports that the peanut plant was quite highly susceptible to three root-knot populations, but highly resistant to seven others tested. His tests showed that an upland cotton, variety Coker, was highly susceptible to one population, slightly susceptible to another, and at least moderately resistant to eleven others against which it was tested. His tests further show alfalfa susceptible to seven of the twelve populations tested. The writer found that of a total of 80 Rosa multiflora plants, inoculated with a population of root-knot maintained on lettuce and tomato, less than 10 percent of the plants showed infection and that was light to moderate.

During November of 1948, moderate to heavy root-knot infections were found on alfalfa plants growing in several fields of the Superstition

---

[1] Report of a study made under the Research and Marketing Act of 1946.

sandy soils near Yuma, Arizona. The purpose of this study, while making no claim to completeness, was to test two types of cotton to the alfalfa root-knot population along with other populations known to cause serious reduction in cotton yields at Sacaton, Arizona.

PROCEDURE

Plants of SxP (American-Egyptian Cotton), okra, and alfalfa which showed root-knot nematode infection were collected for securing a source of the three different nematode populations used in the experiment. The infected SxP cotton and okra plants were secured at Sacaton, Arizona, while the alfalfa plants were collected near Yuma, Arizona.

By aid of the dissecting microscope individual egg masses were removed from the surface of the galls and placed on small pieces of cloth supported by similar-size pieces of screen wire and then placed in petri dishes. One petri dish, together with the cloth and screen wire, was used for each of the three populations. Enough water was added to each dish to keep the cloth moist by capillarity, but not submerge the egg masses. These dishes were then placed in an electric incubator at 26° C. for hatching the eggs. The daily hatch was removed and held in the refrigerator at 7° C. for later use. This method for securing large quantities of root-knot larvae for inoculation purposes is similar to that described by Godfrey (2) except that he placed the roots that showed numerous well developed egg masses directly on the woven wire screens. When only the egg masses are placed on the cloth, the possibilities of securing contaminating nematodes are eliminated. Also common molds, which soon spread over the root tissues, are eliminated when only the egg masses are used.

The experiment was conducted in the greenhouse in pots containing a sandy loam soil. The soil was sterilized by autoclaving for one hour at 15 pounds pressure. The pots were embedded in sand in the greenhouse bench to within one-half inch of the top, a practice which reduced rapid drying and facilitated the maintenance of a more uniform soil temperature.

On November 19, one-half of the pots were planted with Gossypium barbadense (SxP cotton) and the other half with G. hirsutum (Santan cotton). Five to six seeds were placed in each pot, and soon after emergence the plants were thinned to three. The inoculation, which consisted of viable larvae in water, was made by introducing 400 to 500 larvae at the soil surface of each pot. On December 1 sixty pots were inoculated -- ten pots (30 plants) of SxP cotton with root-knot populations from SxP cotton, ten pots with populations from okra, and ten with populations from alfalfa; likewise ten pots each of upland cotton (Santan variety) were inoculated with populations from SxP cotton, okra and alfalfa.

The plants were watered at regular intervals and kept growing vigorously for the duration of the experiment. Relatively high soil temperatures, of 29° C. during the daytime to 24° C. at night, were maintained by means of an electric heating cable embedded in the sand underlying the pots. The experiment was run for a period of 35 days after the inoculum was added. This interval gave ample time for the development of egg masses resulting from the initial infection, but second generation larvae were only partially mature when the plants were harvested.

At the designated time the pots containing the soil and plants were removed to the laboratory, and the soil was carefully removed from the roots by washing with a fan nozzle at low water pressure. This method of removing the soil did not damage the roots nor dislodge the egg masses. The number of egg masses on each plant was counted by aid of the binoculars.

RESULTS AND CONCLUSIONS

Table 1 shows the average number of egg masses per plant for each of the three root-knot populations and the two types of cotton. The greatest number of egg masses per plant resulted from inoculations made with

Table 1. Difference in mean number of egg masses per plant resulting from inoculations of the two species of cotton with three root-knot nematode populations.

Source of nematode inoculum	Cotton host species: G. barbadense (SxP)	G. hirsutum (Santan)
SxP cotton population	15.70	9.57
Okra population	5.83	5.40
Difference[1]	9.87	4.17
SxP cotton population	15.70	9.57
Alfalfa population	0.03	0.00
Difference	15.67	9.57
Okra population	5.83	5.40
Alfalfa population	0.03	0.00
Difference	5.80	5.40

1 Difference between any two means required for significance at odds of 99 to 1 is 3.19 egg masses.

SxP cotton root-knot population on the same type of cotton. The second largest number of egg masses resulted from inoculations of the SxP cotton population on the upland cotton, variety Santan. The number of egg masses resulting from inoculations of the okra root-knot population

on SxP and Santan cotton was essentially the same. Only one egg mass was observed in a total of thirty SxP cotton plants when the alfalfa root-knot nematode population was used as the inoculum. Although the number of eggs in this one mass was not determined, it appeared to be quite similar in size to egg masses resulting when other populations were used. No egg masses were observed from inoculations made with the alfalfa root-knot population on Santan cotton.

References:

1. Christie, Jesse R., and Florence E. Albin. Host-parasite relationships of the root-knot nematode, Heterodera marioni. The question of races. Proc. Helminthological Soc. Wash. 11 (1) : 31-37. 1944.

2. Godfrey, G. H. Some techniques used in the study of the root-knot nematode, Heterodera radicicola. Phytopathology 23 (3) : 323-329. 1931.

3. Sherbakoff, C. D. Root-knot nematode on cotton and tomatoes in Tennessee. Phytopathology 29 (8) : 751-752. 1939.

DIVISION OF NEMATOLOGY, BUREAU OF PLANT INDUSTRY, SOILS & AGRICULTURAL ENGINEERING, U. S. FIELD STATION, SACATON, ARIZONA

ASCOCHYTA BLIGHT OF COTTON IN GEORGIA IN 1949

D. D. Morey and J. H. Miller

Ascochyta blight (Ascochyta gossypii), resulting in leaf-spots and petiole and stem cankers, has been found in serious proportions for the last three years. The writers made a survey this spring and early summer of cotton fields in counties surrounding Clarke and those south to Thomson, Louisville, Sandersville, Milledgeville, Eatonton, and back to Athens. This is chiefly a piedmont area. This survey was supplemented by specimens sent in by most of the county agents in north Georgia.

County agents that sent in specimens and described the disease as of serious consequence are from the following counties: Barrow, Clarke, Emanuel, Greene, Habersham, Hart, Jackson, Jasper, Madison, Oglethorpe, Walton, Warren, and Wilkes.

On June 7 this blight was found in all fields between Athens and Louisville, and back to Athens, with cotton varying from 6 inches to 1 foot in height. In every case farmers said the cotton came up to a good stand and then started dying. We found on this trip an average reduction in stand of about 30 percent. The peak of the disease had been reached and most of the dying took place on younger plants before this date. At this time only the middle and bottom leaves showed many spots. The stem canker symptom so common in 1947 and 1948 was very rare this year. No correlation was found between soil type and incidence of disease.

On June 23, a survey was made north of Athens in Madison County. On ten farms the loss of stand was much worse where cotton followed cotton, and was not severe following other crops and especially where fields were isolated. Again no correlation was found with soil types, fertilizer used, or seed treatment.

Fields around Comer, also in Madison County, were examined June 28. In one 200-acre field the stand had been reduced to 25 per cent. The soil was Cecil sandy loam, the seed Coker's 100 Wilt, treated, and cotton had followed cotton for several years. Just across a terrace from this field was a small patch with almost a perfect stand and here cotton followed lespedeza of several years. On another farm of about 200 acres in cotton the stand was reduced to about 30 percent. Cotton also followed cotton here.

On June 30 a survey was made throughout Oconee County. In the area near Eastville and High Shoals the stands varied from about 25 to about 85 percent.

As a result of these surveys we found most of the cotton died when fairly young, that is before June 7, and average losses in stand for north Georgia were about 35 percent. Seed treatment helped in emergence but did not prevent subsequent dying from this blight. No varietal differences in resistances were noted. White Gold, Coker's 100 Wilt, Empire, and others were uniformly attacked. The greatest mortality was during the last two weeks in May and the first week in June, and then the nights were cool and rains were fairly frequent. Later, when temperatures were higher and there was less rain the disease was very appreciably retarded. The most striking fact observed was the control obtained by rotations.

UNIVERSITY OF GEORGIA, ATHENS, GEORGIA

CONTROL OF APPLE SCAB BY GROUND AND TREE APPLICATIONS OF ERADICANT FUNGICIDES

M. C. Goldsworthy, J. C. Dunegan, and R. A. Wilson

During the period 1940-1943, Keitt and coworkers (5, 6, 7) demonstrated the feasibility of eliminating more than 90 percent of the leaf infection caused by overwintering ascospores of Venturia inaequalis in apple leaves under the trees, by spraying the ground, before the buds open, with the sodium salt of dinitro ortho cresol.

In 1944, Howard, Locke, and Keil (3) reported that certain organic mercury compounds (mercury attached to the benzene ring combined with fatty acids) were very effective agents in eradicating leaf and fruit infection by the apple scab fungus during the early growing season. These organic mercury compounds are as a rule excellent wetting agents and appear to have the property of covering well all plant surfaces treated. In addition they are very potent fungicides and can be used at very low concentrations, thus reducing the risk of injury to young apple leaves and fruits.

It has been the experience of those using one or the other of the above techniques, that neither, when used alone, is capable of eliminating enough of the potential inoculum to obviate the use of an average and sustained spray program to control the disease commercially. Kadow and Hopperstead (4) showed in 1941 that variable results followed the use of ground sprays. The fungicide summaries prepared by the fungicide committee of the American Phytopathological Society for 1947 and 1948 (1, 2) indicate that the use of eradicant mercury compounds on foliage and fruit also appears not to be effective in giving adequate control under all conditions.

These published results have led the writers to investigate the possibility of evolving an apple scab control program based upon both of these methods. It was hoped that such a program would reduce the number of fungicide applications.

During the past three years, several small apple orchards at Plant Industry Station, Beltsville, Maryland, have been subjected to this pattern of treatment. The orchard floor was sprayed with Elgetol, a commercial preparation containing approximately 30 percent of sodium dinitro ortho cresol, during the late dormant period just before the buds began to crack open. This material in a 0.5 percent concentration by volume was applied at the rate of 400 gallons per acre with a horizontal-type multi-nozzle boom at 400 pounds pressure. Each nozzle was equipped with a 4/64-inch disk. Since the spray from the boom did not quite cover the small strip lying in the tree rows, this area was sprayed in 1947 and 1948 by a man on the ground who used a 6-nozzle

boom. In 1949 a horizontal-type boom designed by the Wisconsin Agricultural Experiment Station was used in the tests. This boom is so designed that it takes care of the areas lying in the tree rows.

In addition to the ground spraying with Elgetol, applications of an eradicant fungicide known as 5 percent Puratized Agricultural Spray (phenyl mercury thiethanol ammonium lactate), at the rate of 1 pint to 100 gallons of water, were made to the young leaves and flowers and very small fruits. In 1947 this material was applied at the pre-blossom (pink) and petal-fall (calyx) periods of development while, in the 1948 tests, it was applied only at the petal-fall (calyx) period. In the 1949 tests, phenyl mercury acetate was substituted for the Puratized compound and used at the same rate during the petal-fall period only.

Table 1. Control of scab on apple leaves by ground application and by ground plus tree application of eradicant fungicides, 1947 test.

Variety	Treatment *	Number of leaves counted**	Number of leaves with scab	Percentage of diseased leaves
Stayman Winesap	Ground only	2,230	2,110	94.6
" "	" & tree	4,407	264	6.0
Delicious	" only	3,016	1,982	65.7
"	" & tree	5,043	136	2.7

* Ground spray = Elgetol 0.5 percent, 400 gallons per acre.
Tree spray = Puratized Agricultural Spray, 1 pint per 100 gallons, at prebloom (pink) stage of growth.
Puratized Agricultural Spray, 1 pint, and lead arsenate, 3 pounds per 100 gallons, at petal fall (calyx) stage of growth. Due to crop failure, DDT alone (50% wettable) at the rate of 2 pounds per 100 gallons was applied in two cover applications later to control Japanese beetles.

** Count made during first week in September.

RESULTS

In the 1947 test, the fruit crop was a total failure because of the prevalence of heavy frosts during the blooming period. Leaf counts of scab infection made during May and June indicated that some scab ascospores had escaped the ground treatment. Infection was observed in three Stayman Winesap and three Delicious trees that did not receive the eradicant leaf sprays. At this time the infection was very light in those trees, but the season was favorable for secondary infections

and considerable spread was observed on these trees later. At this early period infection was rarely found on the trees that received the pink and calyx applications of the eradicant fungicide, but as the season advanced infection developed to some degree in all trees. During the first week in September a leaf count was made. The spray schedule and the results are shown in Table 1. It will be seen that the disease was very prevalent on the non-sprayed Stayman Winesap and Delicious apple leaves but was of no consequence on either variety when the eradicant compounds were used. None of the trees received any further fungicide treatment after the eradicant application at the petal-fall period.

In 1948 a similar experiment was set up in the same orchard, but the effectiveness of only one instead of two applications of the eradicant spray was tested. The orchard floor of all plots was sprayed with Elgetol on March 30 about a week before the buds started to crack open, 400 gallons per acre of a 0.5 percent concentration by volume of the material being used. Ascospore development was found to be very much advanced at the time the ground application was made, and fully 20 percent of the asci were full of mature ascospores. Puratized Agricultural Spray at the rate of 1 pint of a 5 percent solution to 100 gallons of spray fluid was applied to the trees of the treatment plots at the petal-fall (calyx) period of development. Although the season was very favorable for early scab infection, none developed in the sprayed trees and very little could be found in the nonsprayed check trees during April or May. After this time, however, because of the continued favorable environment for the scab organism, infection of the nonsprayed trees became noticeable and a slight amount developed in some of the sprayed trees. No fungicide sprays were used for the rest of the season. The spray schedule and results for 1948 are given in Table 2. Leaf counts for scab infection were made in early September and the fruit counts at harvest time. None of the infected fruits from the trees receiving both the ground and petal-fall eradicant applications were diseased enough to consider them unfit for shipment or for consumption, while many of those harvested from the trees that were ground sprayed only were severely diseased and most of them would have been culled out of a commercial pack.

The same type of experiment was carried on in the 1949 season, another favorable scab year, but phenyl mercury acetate was used at the rate of 1/2 pint of a 10-percent solution in 100 gallons of water at the petal-fall (calyx) period only, instead of the Puratized material. Results similar to those of the two preceding seasons were obtained. During the first week in June, after an extremely favorable infection period during May when almost 7.0 inches of rainfall was recorded, 16.1 percent of the leaves on the treated and 67.5 percent on the untreated Delicious trees were observed to be diseased, while 26.4 percent of the leaves on the treated and 60. 3 percent of the untreated Stayman Winesap trees were found with infections. The infection on the leaves

of the treated trees was found to be very light while on the untreated trees it was much heavier.

In addition to the above experimental tests at Beltsville, Maryland, a commercial test of this method was conducted in an apple orchard near

Table 2. Control of leaf and fruit scab of apple trees by ground application and by ground plus tree application of eradicant fungicides, 1948 test.

Variety	Treatment *	Percent of leaf scab **	Percent of fruit scab	Degree of fruit infection
Delicious	Ground only	92.6	61.0	Mostly severe
"	" & tree	13.0	16.2	" light
Stayman Winesap	" only	92.8	70.0	" severe
" "	" & tree	22.4	2.0	" light

* Ground spray = Elgetol 0.5 percent, 400 gallons per acre.
Tree spray = Puratized Agricultural Spray, 1 pint per 100 gallons, at petal fall (calyx) only.
Lead arsenate and DDT and lime 2-2-4-100, at 1st and 2nd cover applications.
Vapotone, 1 pint of 50% solution per 100 gallons, at 3rd and 4th cover applications.
DDT (50% wettable), 2 pounds per 100 gallons at 5th and 6th cover applications.

** Leaf scab counts were made early in September.

Cheswold, Delaware, during this same 3-year period. This orchard consists of about six acres of mature Delicious, Rome Beauty, and Grimes Golden apple trees. The orchard was severely affected by apple scab at the beginning of the tests. A schedule of ground spraying with 400 gallons per acre of a 1/2 percent solution of Elgetol before bud swelling, followed by one application of Puratized Agricultural Spray at the rate of 1 pint in 100 gallons of spray at the full pink blossom stage and one application of the same material at petal-fall (calyx), was carried out for two seasons (1947-48). In addition several applications of wettable sulfur were made during the cover period. In 1949 the test differed in two respects: (1) only half of the orchard floor was treated and (2) Puratized was applied only at petal fall over the whole orchard. Since untreated plots were not used in the commercial tests in 1947 and 1948, the results obtained, while very satisfactory,

can not be regarded as strictly valid according to experimental standards. However, in 1949 when one-half of the orchard floor was not treated, 3.0 percent of the Delicious leaves in the treated part and 36.8 percent of those in the untreated part of the orchard were found to be infected, while with the Rome Beauty variety, 4.7 percent of the leaves on the treated part and 26.8 percent of those on the untreated part were found infected in late May.

The experiments in the three seasons when apple scab was generally very prevalent and difficult to control in many orchards, appear to indicate that the use of eradicant fungicides applied in two steps is of promise in the control of this disease; first, by eliminating a great deal of the ascospore inoculum in the diseased leaves that lie on the orchard floor, and, second, by eradicating the early infections that develop on leaves and fruits from the small amount of ascospore inoculum that escapes the floor treatment. These tests appear to confirm previous experiments showing that the use of eradicants on the floor of the orchard does not eliminate the need of subsequent sprays to control the disease. These tests likewise show that the use of an eradicant at the time of bloom or later is also inadequate for controlling the disease in seasons of epidemic, with one or several applications. The experiments presented here do, however, indicate that if the eradicants are used in a logical sequence, one for cutting down the original inoculum to a minimum on the floor of the apple orchard, and the other to cut down the small amount that escapes this original treatment, the problem of scab control is simplified.

It is realized that it is not always possible to spray the orchard floor, for on hilly and rocky sites, it is very difficult to operate a horizontal spray boom satisfactorily. Likewise, it is difficult to operate orchard machinery in some cases very early in the season, because of the melting of snow and the excessive wetting of the orchard floor. It is not practical to do this work in the fall since the trees lose their diseased leaves over a long period and the fallen leaves may become stirred up at times by the early winter winds. Later on, the leaves appear to become fixed to the floor of the orchard, are held in place by the occasional snow, are generally kept moist during this period; and the leaves that finally become fixed to the floor are easily wetted by the eradicant fungicides in the early spring.

In those situations where it is not possible to use a ground spray, it appears at the present time that the orchardist has no choice but to resort to the laboricus method of constant protective spraying. In many instances, however, these obstacles do not exist and it appears reasonable to believe that the use of the eradicants in the sequence indicated may be very helpful in such cases.

It is also realized that other diseases may be present in an orchard and have to be controlled. In these cases, supplementary applications of fungicides have to be made to fit the circumstances. Where apple rust is a problem, dithiocarbamate fungicides have been recommended to be used during the early season. Their use should follow the applications of the mercury eradicants, since leaf injury and fruit abscission have been observed where the mercury compounds were used after the application of the dithiocarbamates. Where apple blotch or apple bitter rot is present each season, special applications of copper or dithiocarbamate will have to be introduced at the time needed. Where sooty blotch is common, an application of sulfur, copper, or dithiocarbamate one month before the general harvest is indicated. None of these diseases appear to be controlled by the application of the mercury compounds early in the season.

The mercury compounds are poisonous to animals and are not recommended for use on apple fruit after the time of the first cover spray. At this time the young fruits are very small and do not retain any significant quantity of residue. Care also should be exercised in handling the mercury concentrates since they are corrosive to the mucous membranes. If, by accident, these materials are deposited on the exposed parts of the body, drenching with water is indicated since the diluted material is not injurious.

Literature Cited

1. Fungicide Committee: American Phytopathological Society. 1947 Fungicide Tests: A summation of nation-wide results with newer fungicides. Plant Disease Reporter, Supplement 176, May 15, 1948.

2. _____. Nation-wide results with fungicides in 1948. Fourth Annual Report. Plant Disease Reporter, Supplement 181, March 15, 1949.

3. Howard, F. L., S. B. Locke, and H. L. Keil. Synthetic organic fungicides for apples. Proc. Amer. Soc. Hort. Sci. 45: 131-135. 1944.

4. Kadow, K. J., and S. P. Hopperstead. Ground spray aid in control of apple scab. Phytopathology 31: 13. Abstract. 1941.

5. Keitt, G. W., C. N. Clayton, and M. H. Langford. Eradicant fungicidal treatments in relation to apple scab control. Phytopathology 30 : 13. Abstract. 1940.

6. _____, _____, and J. D. Moore. Experiments with eradicant fungicides in relation to apple scab control. Phytopathology 31 : 13 Abstrace. 1941.

7. Keitt, G. W., and J. Duain Moore. Experiments with eradicant and protective sprays for apple scab control in 1942. Phytopathology 33 : 6. Abstract. 1943.

DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES, BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, AGRICULTURAL RESEARCH ADMINISTRATION, U. S. DEPARTMENT OF AGRICULTURE, BELTSVILLE, MARYLAND

THE USE OF SODIUM HYPOCHLORITE IN THE CONTROL OF PEACH DISEASES[1]

Curtis L. Mason

Sodium hypochlorite in commercial solution is well known for its uses in household disinfection, in the sterilization of dairy utensils, and in the bleaching of clothing. It is also very useful in surface sterilization of material for culture isolations in the laboratory. Recent work[2] has indicated that a dilute solution of chlorine water was effective in reducing the amount of storage rot of peaches dipped in the solution. Since no damage to the fruit was reported, it was considered likely that no damage would be incurred by spraying similar solutions on a dormant tree. Consequently, sodium hypochlorite was included in a series of treatments applied to Elberta peach trees in the delayed dormant stage for the control of bacterial spot (caused by Xanthomonas pruni). Sixteen trees were sprayed in a commercial orchard near Nashville, Arkansas on March 1, 1949 under temperature conditions of approximately 40°F. One gallon of commercial sodium hypochlorite containing 5 1/4% of active ingredient (Clorox was used) was added to 100 gallons of water. The trees were sprayed thoroughly. A disease count taken on April 19 revealed that the trees sprayed with this material had an average of 8 percent of the leaves showing symptoms of bacterial spot while 16 unsprayed trees in the same block had an average of 17 percent of the leaves showing symptoms.

On May 12, five Elberta trees with normal foliage were sprayed with a solution of sodium hypochlorite of the same concentration as in the dormant spray in order to determine the phytotoxicity of the material. Since no adverse effect was observed by May 14, two hundred Elberta trees in a commercial orchard were sprayed with the material at the same concentration. No adverse effects were observed by May 20 and the trees were then sprayed with a solution containing two gallons of commercial sodium hypochlorite per 100 gallons of water. No adverse effects were observed by May 27, and another application of the same strength solution was made. All of the trees in this orchard had a rather heavy incidence of bacterial spot on the foliage but very little on the fruit. The leaves continued to fall following the three applications, but not so heavily as from the trees in the remainder of the block that had received the regular applications of zinc-sulfate and lime.

Rainfall was heavy through early June, and by June 15 brown rot (caused by Sclerotinia [Monilinia] fructicola) was becoming an increasing problem owing to the numerous growth cracks occurring in a block

---

1 University of Arkansas Journal Series No. 872.

2 Cardinell, H. A. and A. E. Mitchell. Packing House Trials to Reduce Peach-rot. Mich. Agr. Exp. Sta. Quar. Bull. Vol. 30:460-467.

of Fair's Beauty peaches adjacent to the Elbertas. This block of approximately 20 acres was sprayed with a solution of 2 gallons of commercial sodium hypochlorite per 100 gallons to try its effectiveness for brown rot control. Although weather conditions remained unusually favorable for the development of brown rot, the grower had very little brown rot in this block, in which harvest was completed by June 29. The results were so favorable that three growers in the vicinity used sodium hypochlorite (two used 1 1/2 gallons per 100 gallons and one used one gallon per 100 gallons) on their Early Elbertas, applying the sprays on June 27 and 28 and completing their harvest about July 9. In each case, very favorable results were reported.

In view of the very favorable results obtained so far on peach diseases, the experimental use of sodium hypochlorite for the control of various diseases on other plants is suggested. Tests of this nature are now being made at the University of Arkansas. When the properties of the material are considered, it seems likely that the use of sodium hypochlorite in the control of plant diseases may become very widespread, perhaps limited only by its possible phytotoxicity to certain host plants.

UNIVERSITY OF ARKANSAS, DEPARTMENT OF PLANT PATHOLOGY, FAYETTEVILLE, ARKANSAS

A DESTRUCTIVE DISEASE OF PEAR IN ITALY: REQUEST FOR AID IN DETERMINING CAUSE AND CONTROL

Dr. Raffaele Ciferri of the University of Padua would like the help of American pathologists in determining the cause of and preventing further devastation from a disease that threatens destruction of pear orchards in the Provinces of Trento and Bolzano, Italy. Apple trees also are affected but to a less extent.

Dr. Ciferri writes that so far as he has been able to find, the disease has not been encountered in other European countries.

The disease was first noticed about 40 years ago, but since 1942 the number of trees affected has increased to an alarming extent, from 2,000 observed in 1942 to 50,000 in 1947. Loss from crop failure and from injury to the trees has amounted to about 800 million lire.

Early varieties are particularly susceptible. Age of the tree apparently is not important, although those 10 to 20 years old are most frequently attacked. Affected trees have been observed in locations differing widely in climate, type of soil, altitude, exposure, amount of irrigation, etc. Symptoms may vary with local conditions.

Pear tree, variety "William" /?Bartlett/, with small, narrow, reddish-yellow leaves. The contrast with the healthy tree in the background is evident.

Brownish-red flecks in phloem and cambium.

Pear disease in Italy. See pages 320-322

Aspect of branches from a diseased tree at the end of summer: small narrow leaves, more or less curled, yellowish to rust-red. Partly defoliated.

Dried up, imperfect inflorescences. On twigs from a tree in advanced stages.

Pear disease in Italy. See pages 320-322

The disease appears gradually in an orchard, on only occasional trees at first. The first symptom is decreased vigor, with poor growth of branches, increased production of shoots, and slightly smaller and paler leaves. Sometimes only a portion of a tree is affected. Leaf fall is usually early and preceded by more or less reddening. Flowering is profuse, but blossom clusters are weak and imperfect, particularly at branch tips. Fruits are partly aborted and if they reach maturity are generally undersized and insipid and suffer greater damage from drought. Vegetative shoots at ends of branches suddenly stop growing, dry up and turn brown; adventitious buds then produce either new shoots that follow the same course, or chlorotic leaves characterized by premature reddening in autumn. Internal symptoms are scattered small irregularly-shaped reddish-brown spots in the cambial zone; these aid in winter diagnosis which is difficult in early stages.

Symptoms are accentuated in the second year. Tips of affected branches die back. The cortex on living parts becomes light reddish-brown to reddish-yellow or rust color. Bast and underlying tissues are generally turgid and blackened; wood is a dark brown. The brown flecks in the cambial zone are more numerous. Depressions in the bark corresponding to the necrotic areas are frequently noted on the trunk and larger branches.

The next spring the trees still produce numerous flowers which wither before anthesis. Leaves are small, sometimes with the tips lobed instead of acuminate or rounded, more or less folded at the veins, fragile, pale. Many leaves fall and the branch withers.

In the fourth year the tree ceases to grow entirely, or more often produces a few flowers from the base of the branch, with a few clusters of leaves on the same twig, and weak shoots on the trunk and at the base of the main branches. The tree dies during the year.

In recent years development has been accelerated: while the first trees attacked in an orchard are gradually dying, other trees become affected. The disease does not spread from a single center; attacked trees are often in groups of four or five or more, but not infrequently single trees are affected while others of the same age and source in the immediate vicinity may be apparently healthy. Sometimes healthy and diseased trees alternate in groups of two or three.

Roots show no anomalies except for the scanty development of absorbing rootlets, although these are normally few and delicate in the pear. Progressive dying of the roots can be observed only in trees in an advanced stage of the disease. The centripetal progress of the disease in the roots is analogous to that in the branches.

Microscopic examination shows progressive degeneration in the cambial zone, with internal cessation and outward retardation of proliferative

activity and the production of only partially differentiated hypertrophied cells; necrosis is the ultimate result. These characteristics are evident in apparently healthy regions of affected trees, when examined microscopically, as well as in the blackened necrotic zone. Numerous irregularities depend on the parts affected and on the stage of development of the disease. Sometimes normal activity of the cambium is resumed, or sectors are formed due to the activity of the phellogen.

Tests so far exclude bacteria, fungi, or insects as cause of the disease. Three years of budding experiments have failed to demonstrate the presence of a virus, according to Dr. Ciferri. However, the possibility of virus infection, nutritional relations, and accumulation of poison in the soil from chemical treatments is being investigated.

The accompanying illustrations show some of the characteristics of the trouble.

Any American pathologist who has had experience with a similar disease of pear or apple should communicate directly with Dr. Ciferri. His address is:

Prof. Raffaele Ciferri, Università di Pavia,
Via S. Epifanio 4, Castella Postale 165, Pavia, Italia

(The translation on which the above account is based was made from the original Italian by Miss Edith K. Cash)

DISEASES OF CABBAGE AND OTHER CRUCIFERS IN THE HASTINGS AND SANFORD AREAS, FLORIDA, IN THE 1948-1949 SEASON

A. H. Eddins and Stanley R. Burrell

The winter of 1948-1949 was extremely mild in Florida and temperatures and rainfall favored development of diseases of cabbage and other crucifers.

Cabbage Yellows [Fusarium oxysporum f. conglutinans]. This disease was observed in the Hastings area for the first time in November 1948. It was found in 27 fields comprising about 313 acres as reported in PDR 33:249-251. 1949.

Black Rot[1] On December 3, 1948, 22 fields comprising 196 acres of cabbage and cauliflower in the Sanford area were inspected for diseases. Black rot and Alternaria leaf spot were the most common diseases found but the former was causing most damage. Five to 65 percent of the cabbage plants in 95 acres were affected with black rot and a trace was present in 40 acres. Plant infection in cauliflower fields comprising

[1] [Xanthomonas campestris (Pam.) Dowson]

26 acres varied from 8 to 20 percent.

In one 30-acre field which had been planted to cabbage for 14 successive years 65 percent of Glory of Enkhuizen plants in 20 acres were severely affected with black rot. Thirty percent of Copenhagen Market plants in the other 10 acres also were similarly affected.

Black rot also was generally distributed in cabbage fields in the Hastings area, but in most fields plant infection did not exceed 5 percent. In 8 fields comprising 30 acres, infections ranged from 5 to 30 percent. The disease caused greatest damage in fields set with plants imported from Georgia.

Cabbage plants started from hot-water-treated seed in sterilized soil were set in an experimental block where all cabbage plants were destroyed by black rot in 1943. Only 8 percent of the 240 plants grown in this block in 1949 developed the disease. Ninety-eight percent of Georgia-grown cabbage plants set in a 10-acre field in 1948 developed black rot, but the disease appeared in only 7 percent of home-grown plants set in the same field in 1949. Observations indicate that black-rot-infected plants imported from Georgia, infested seedbed soil, and diseased seed were the principal sources of the disease in the 1948-1949 season.

Blackleg. Approximately 500 pounds of European-grown cabbage seed imported from Holland were sown in seedbeds at Hastings in the fall of 1948. Pycnidia of Phoma lingam Fr. (Desm.) were observed on stems of seedling plants in the plant bed and also on stems of plants about 3 weeks after they were transplanted to the field. Blackleg lesions on stems were soon invaded by Alternaria spp., mostly Alternaria oleracea Milbrath, which outgrew the Phoma. Pieces of stems with light brown lesions embedded with pycnidia but without an overgrowth of Alternaria spp. were sterilized in bichloride of mercury and placed on the surface of potato dextrose agar in petri plates. Of the isolates obtained, two produced pycnidia and spores typical of those of Phoma lingam. No symptoms of blackleg were observed on the leaves of cabbage plants and the disease did not produce a stalk rot in the field.

Alternaria Leaf Spot. Leaf spot caused by Alternaria oleracea Milbrath is one of the most destructive diseases of cabbage and cauliflower in Florida. It develops rapidly during warm, rainy weather and causes damping-off of seedlings, a wire-stem and cankers on stems of seedlings; and a spotting of leaves and heads of older plants.

About 80 percent of the seedlings in a cabbage plant bed were destroyed by Alternaria leaf spot. Young seedlings damped-off soon after they emerged from the soil or died after their stems were rotted and blackened by the invading fungus.

Three fields of cabbage totaling 17 acres, set with Tennessee-grown plants, were abandoned before cutting as a result of head spotting, and ten acres set with Georgia-grown plants similarly affected also were a total loss. The disease caused considerable damage in fields set with home-grown plants, but it did not destroy any crops completely.

Downy Mildew. Downy mildew caused by Peronospara parasitica (Pers.) Fr. killed all plants in 3 seedbeds totaling ten acres and caused great damage in others which were not properly sprayed or dusted with Spergon. Head spotting due to this disease was common in all cabbage fields. The two diseases, downy mildew and Alternaria leaf spot, caused greater losses during the 1948-1949 season than all other cabbage diseases combined.

Watery Rot. Watery rot caused by Sclerotinia sclerotiorum (Lib.) D By. was observed on cabbage seedlings in several plant beds at Hastings. It occurred scatteringly in beds of rank-growing plants. Five to 10 percent of the plants drawn from one affected bed were killed by the disease soon after they were transplanted to fields totaling over 100 acres. Observations indicate that infected transplants are a more common source of the disease in the field than has been noted heretofore.

In one field of 20 acres planted to cabbage several successive years, approximately 15 percent of the heads were destroyed by watery rot. The disease was present in all maturing crops of cabbage and cauliflower but extensive damage was limited to a few fields.

White Rust. White rust caused by Albugo candida (Pers.) Ktz. was observed in May on mustard leaves in gardens. It was not seen on cabbage, cauliflower, and broccoli as these crops were grown during seasons when temperatures were not favorable for development of the disease.

Powdery Mildew. Powdery mildew caused by the fungus Erysiphe polygoni DC. was present on rutabagas and mustards grown in an experimental garden during the winter and spring months. It was not observed on turnips, collards and other crucifers.

UNIVERSITY OF FLORIDA AGRICULTURAL EXPERIMENT STATION, POTATO INVESTIGATIONS LABORATORY, HASTINGS

HORSE-CHESTNUT ANTHRACNOSE IN MISSOURI

E. S. Luttrell

The anthracnose of horse-chestnut reported by Pierce and Hartley[1] has been found in Missouri on horse-chestnut (Aesculus hippocastanum L.) and buckeye (A. octandra Marsh.). On buckeye, it is a leaf disease of

little importance. On horse-chestnut, it appears to be a serious disease, causing a dieback of the branches and severe cankers on the branches and trunk in addition to the leaf lesions described by Pierce and Hartley.[1] As was reported by Pierce and Hartley, the cause of this disease appears to be Glomerella cingulata (Stonem.) Sp. & v. Schr.

The disease was first noticed in 1947 on a 12- to 15-year-old horse-chestnut shade tree on the University of Missouri campus. This tree has been under observation during the past two years. Lesions appeared on the leaves in June and caused severe defoliation by September. The lesions were elongated, brown, necrotic areas closely limited to the major veins of the leaflets. They were formed most commonly on the midrib. Lesions near the base of the midrib quickly caused the death of the entire leaflet. Similar sunken, brown lesions appeared on the petioles and spread rapidly, involving the entire petiole. The infected leaves fell from the branches, or only the leaflets dropped, leaving the dead petioles attached to the branches. Immediately after the death of infected tissue acervuli, producing pink to orange spore masses, developed on the veins on the lower surface of the leaflets and on the petioles. Perithecia appeared as tiny, black pimples over the surface of the petioles soon after the formation of acervuli.

The defoliated branches often were killed back from the tips, and this dieback progressed toward the base of the branch during succeeding seasons. Depressed cankers were formed on the larger branches. Usually these cankers appeared around the base of a dead lateral branch, suggesting that the infection had spread from the petioles into the smaller branches and then into the larger branches. Very large, vertically elongated cankers were present on the trunk, and some extended to the base of the tree. In the spring pustules appeared in the infected bark that was killed during the previous season. These pustules contained spores, but the spore masses were not conspicuous. When, however, sections of dead branches were placed in a moist chamber overnight, large, orange spore masses developed in the pustules. On stems kept in the moist chamber for 12 days, masses of superficial, black perithecia were formed. The pustules remained as empty craters in the bark but did not produce spores after the first year. In May, a few young succulent shoots, arising from buds located just below the dead parts of infected branches, were suddenly blighted.

Several smaller buckeye trees in the vicinity of the horse-chestnut showed mild symptoms of this same disease. On the buckeyes only a few leaves were infected. The lesions, although similar to those on horse-chestnut leaves, were generally smaller and did not spread rapidly. Infected leaves were rarely killed, and there was no infection of the branches or trunks.

---

[1] Pierce, Roy G. and Carl Hartley. "Horse-Chestnut Anthracnose." Phytopath 6: 93. 1916

Pierce and Hartley observed the conidial stage of a fungus belonging in Collectotrichum on diseased horse-chestnut leaves in Washington, D. C. and on leaves with similar symptoms from New Rochelle, New York, they found perithecia characteristic of the genus Glomerella. They decided that both the imperfect and perfect stages they found represented the same fungus, which they referred to Glomerella cingulata. Horse-chestnut anthracnose in Missouri likewise may be attributed to G. cingulata. Here both the conidial stage and the perithecial stage were constantly associated on infected petioles. Furthermore, all isolates of the fungus from conidia, ascospores, or infected tissue have produced both conidia and ascospores in culture on sterilized snap bean stems. The acervuli on leaf veins and petioles were circular and approximately 0.2 mm. in diameter or elongated and up to 0.8 mm. long. The conidia were hyaline, non-septate, oblong, usually straight and measured 10.8 - 16.2 x 3.6 - 6.8 μ. Stiff, tapering, dark brown, septate setae measuring 48 - 112 x 4 μ were produced in the acervuli. Conidia formed in pustules on the branches measured 11.7 - 21.6 x 4.4 - 6.8 μ, while those formed in culture measured 9.0 - 15.3 x 4.0 - 6.8 μ. The perithecia on petioles were black, innate, spherical, without a definite beak, and 112 - 148 μ in diameter. They were densely aggregated and often confluent. The asci were clavate to cylindrical, measuring 46.8 - 68.4 x 10.8 - 12.6 μ. Each contained eight hyaline, non-septate, oblong, usually curved ascospores, containing one or two conspicuous globules and measuring 13.5 - 20.7 x 4.3 - 7.2 μ. The perithecia formed on dead branches placed in a moist chamber were superficial and produced elongated beaks. Ascospores produced under these conditions measured 14.4 - 23.4 x 3.8 - 6.8 μ. Ascospores produced in culture measured 16.2 - 21.6 x 3.6 - 5.4 μ.

The conclusion that Glomerella cingulata is the cause of both the leaf and stem symptoms observed on horse-chestnut is based upon the presence of acervuli of this fungus on dead tissue of the leaves, branches, and trunk and upon the consistent isolation of the same fungus from infected tissue at the margins of lesions on all parts. G. cingulata was the only organism isolated from the leaves and upper branches. It was repeatedly isolated also from cankers on the larger branches and on the trunk except from the lower portions of large cankers extending to the base of the tree. Only a Fusarium sp. was isolated from dead tissue at the base of the trunk. What appears to be the same Fusarium sp. was isolated from cankers high on the trunk and on the bases of large branches along with G. cingulata. Conidia of Fusarium were sometimes found in the pustules on the trunk cankers along with those of Glomerella. It is probable that G. cingulata alone is responsible for the leaf disease and for the dieback and cankering of the upper branches. It seems probable also that this fungus is capable of causing severe cankers on the larger branches and trunk. There is some question, however, as to whether the Fusarium sp. is a secondary organism invading the dead tissue of cankers caused by G. cingulata, or whether it may be responsible

in part for the general decline of the tree. Although it seems likely that the Fusarium sp. is merely a secondary saprophyte, inoculations will be necessary to determine this point.

The perithecia on overwintered petioles were empty and partially disintegrated in the spring. It seems likely, therefore, that Glomerella cingulata on horse-chestnut overwinters primarily as mycelium in infected branches and that the primary source of inoculum is conidia produced on these branches the following spring.

BOTANY DEPARTMENT, UNIVERSITY OF MISSOURI, COLUMBIA, MISSOURI

JUNIPERS PREVIOUSLY REPORTED BLIGHT RESISTANT NOW PROVED SUSCEPTIBLE TO PHOMOPSIS JUNIPEROVORA

Glenn G. Hahn

The increasing importance of eastern red cedar, Juniperus virginiana L., particularly in the Prairie Region of the Central States, has caused forest pathologists to pay greater attention to diseases affecting this valuable tree. One of the most destructive of these diseases is cedar blight consisting of a dieback and canker (1). Although this disease has been investigated studies to date have revealed only a scant number of juniper species and varieties purported to be resistant to the blight[1]. This paper reports inoculation tests with a varietal form of virginiana and two trees of the species reported to show blight resistance (2, pp. 117, 121).

Tests on the Dundee Juniper

Older plants of the so-called blight-resistant Dundee Juniper, Juniperus virginiana var. hilli Kumlien[2] (4, p. 170), [syn. J. virginiana pyramidaformia hilli, in Hill's Evergreens p. 17, (1924); J. virg. pyramidiformis D. Hill ex Rehder in Bailey, Cult. Evergr. p. 205 (1929) and Rehder, Man. Cult. Trees and Shrubs, p. 14 (1927), ed. 2, p. 67 (1940)] have been observed to show blight resistance in the field. We have had no experimental knowledge, however, concerning the reaction to the disease of the form in the very young stage. Through the generosity of Mr. Arthur Hill, of the D. Hill Nursery Co., small grafted stock of the Dundee Juniper was obtained by the writer for experimental purposes in 1947 from Illinois where the variety, known for its symmetry and attractive winter coloring of soft plum-purple, was discovered about 30 years ago (4, p. 170).

In early March, 1949, nine potted plants of the Dundee Juniper that under ordinary greenhouse conditions had become of sufficient size for testing, were inoculated with a pure monospore culture of Phomopsis juniperovora. The inoculum came from a transplanted, nursery, red cedar seedling that had been collected originally by T. W. Bretz in Missouri in 1948, but that subsequently died with blight in a greenhouse. The inoculation technique, which was performed under conditions as nearly aseptic as possible, involved making a longitudinal slit-wound through the cambium to the xylem. The edges of the wound were

---

1 The perfect stage of the causal organism, Phomopsis juniperovora Hahn (1920), which is very probably a species of Diaporthe, still remains undiscovered. Accordingly, the long-distance dissemination of the parasite remains unexplained insofar as this fungus state is concerned.

2 According to a written communication received by the writer from Professor Alfred Rehder, Arnold Arboretum, Harvard University, Kumlien is the author to be quoted for the botanical name of the Dundee Juniper.

raised slightly by cutting and lifting the cortical tissues to form a pocket to receive a bit of the inoculum. The point of inoculation was then wrapped with moist cotton and an outer cover of paraffin paper, the whole securely tied above and below. Incisions were made only on the main axis which at the time was 3 to 4 mm. in diameter. Each inoculated plant also carried a check incision near the base of the plant below the inoculation site. These were treated identically except that a bit of sterile agar medium was substituted for the Phomopsis inoculum.

In the event that young stock of the Dundee Juniper should prove to be blight-resistant in the test, it was desirable to ascertain the virulence of the isolate being used for inoculation purposes. Accordingly, a blight-susceptible clone Juniperus virginiana var. Berg's rust-resistant (5, p. 6) was also inoculated with it. While this form is known to be resistant to the cedar-apple rust, Gymnosporangium juniperi-virginianae Schw. (3;5, p. 6), it is quite susceptible to Phomopsis juniperovora under experimental conditions (3). In the parallel tests made on one of the Berg Junipers previously cited (3), three lateral branches 3 to 4 mm. in diameter were inoculated; check incisions were placed similarly on separate branches.

All nine inoculated plants of the Dundee Juniper as well as Berg's Juniper became infected with Phomopsis juniperovora. Symptoms of blight were observed within a week after inoculation when discoloration and desiccation of parts beyond the inoculation site became evident; rapid girdling occurred, with the eventual death of parts beyond. The fungus extended only a very short distance below the inoculation site where it became walled-off from the healthy tissues below. Reisolations of the pathogen were made from several of the infected Dundee Junipers. Fruiting bodies of the Phomopsis also occurred about the incisions on all the lesions; the checks healed promptly.

Other Tests on Possible Resistant Cedars

In 1943 the writer recorded two specimens of Juniperus virginiana of light color that showed blight-resistant possibilities (2, p. 117). In 1946, when he tested Berg's Juniper and showed it to be susceptible to Phomopsis juniperovora (3), he also reinoculated the two cedars that showed blight-resistant possibilities, in parallel tests using the same inoculum. Four inoculations were placed on each tree on lateral branches whose diameter was 3 to 4 mm. at the wound-inoculation site; three checks on each tree were placed on separate branches of similar diameter. The later tests, however, showed the two virginiana specimens to be as susceptible to blight as Berg's Juniper (3). The parasite was reisolated from the girdling lesions caused by the pathogen; the checks healed over.

SUMMARY

The scant number of known junipers reported to be resistant to cedar blight (Phomopsis juniperovora) is further reduced as the result of tests that have shown the Dundee Juniper, Juniperus virginiana var. hilli, and two specimens of J. virginiana, to be susceptible to cedar blight under experimental conditions. All three had been recorded previously as blight resistant.

Berg's rust-resistant form of Juniperus virginiana again proved to be blight susceptible in parallel tests.

Literature Cited

1. Hahn, G. G. Distribution and hosts of cedar blight in the United States. U. S. Bur. Plant Indus., Plant Dis. Rptr. 24:52-57. 1940.

2. _____. Taxonomy, distribution, and pathology of Phomopsis occulta and P. juniperovora. Mycologia 35:112-129. 1943.

3. _____. Berg's rust-resistant red cedar susceptible to Phomopsis juniperovora in greenhouse tests. Phytopath. 37:530-531. 1947.

4. Kumlien, L. L. The friendly evergreens. pp.237. 1946, Ill.

5. Riker, A. J. Some possibilities for developing resistance to disease in trees. Am. Nurseryman 81: (12) 5-7. 1945.

U. S. BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, IN COOPERATION WITH YALE UNIVERSITY, NEW HAVEN, CONNECTICUT

BRIEF NOTES ON PLANT DISEASES

SESAME SEEDLING BLIGHT IN TEXAS

By E. M. Hildebrand

A serious leaf spot or blight condition developed on sesame seedlings when about four inches tall in the experimental plantings of the Texas Research Foundation at Renner on about June 10, and specimens were received for identification. Bacteria were demonstrated in the leaf lesions and the organism was isolated into pure culture and identified as Pseudomonas sesami, the same organism previously reported as causing a bacterial leaf spot in Texas (Dunlap, PDR 27: 274. Aug. 1, 1943.); Altstatt, PDR 28: 1104-1105. Nov. 7, 1944.).

TEXAS A & M COLLEGE, COLLEGE STATION

STALK ROT OF CORN CAUSED BY PYTHIUM BUTLERI SEVERE IN INDIANA

By Arnold J. Ullstrup

Within the past week reports and samples of Pythium stalk rot have been sent in from nearly every section of Indiana. Most of the samples have been from the southern half of the State, but a few have come in or have been observed within 50 miles south of Chicago.

The onset of the disease has been preceded by two weeks of hot, humid weather in which maximum temperatures were in excess of 90°F.

The symptoms of the disease are identical with those described by Elliott (Journ. Agric. Res. 66: 21-39, 1943). When leaf sheaths are removed near the base of the plant and adjacent to the rotted area, a well developed mass of mycelium is frequently observed. Rotted stalks placed in a saturated atmosphere at 30° F. show profuse development of mycelium within 24 to 48 hours.

The disease has occurred before in Indiana, but only in insignificant proportions. This year, however, appreciable damage is expected to occur. In one 100 acre field examined about 60 miles north of Lafayette, 10 percent of the stalks were already broken over and about the same percentage showed incipient infection. One report has been received in which 20 to 30 percent of the plants were severely rotted. The disease does not appear to be associated with any particular soil type nor has there been, to date, any evidence of differences in susceptibility among hybrids.

BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, AND DEPARTMENT OF BOTANY AND PLANT PATHOLOGY, PURDUE UNIVERSITY AGRICULTURAL EXPERIMENT STATION, LAFAYETTE, INDIANA, July 11.

OAK WILT IN INDIANA

By George B. Cummins

Oak wilt [Chalara quercina] has been found in Indiana for the first time so far as we are aware. The first report came from Gary and was substantiated by Dr. R. W. Samson and myself. In a later cursory survey Dr. F. W. Stearns and I found numerous infection centers along State highway 49 between Kouts and Newland. The southernmost location was about 45 miles south of Lake Michigan and 25 miles east of the Illinois line. Nothing was found east of Gary in the Lake region or south of Gary until the vicinity of Kouts, some 25 miles south of Gary. How prevalent it may be in other areas is not known.

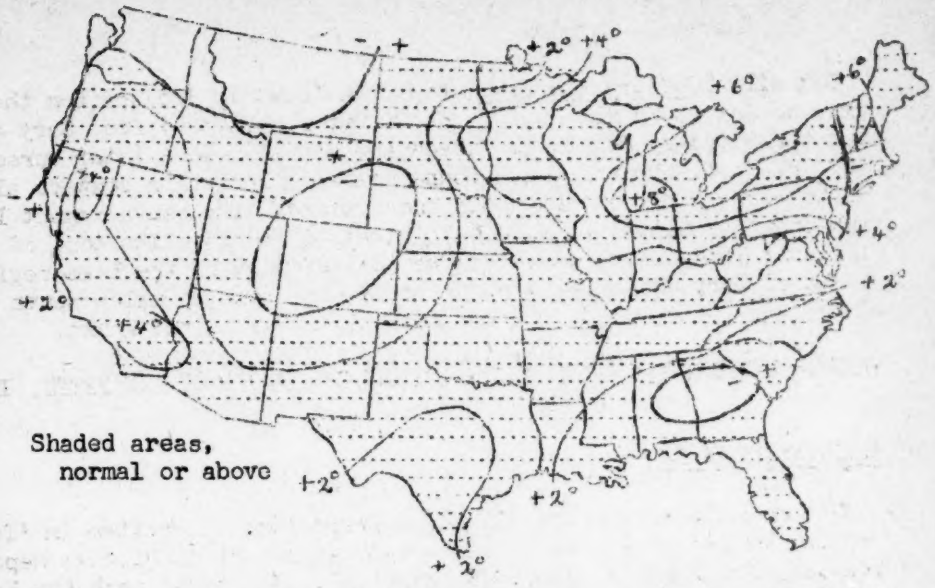
PURDUE UNIVERSITY AGRICULTURAL EXPERIMENT STATION, LAFAYETTE, INDIANA

SOME CORRECTIONS

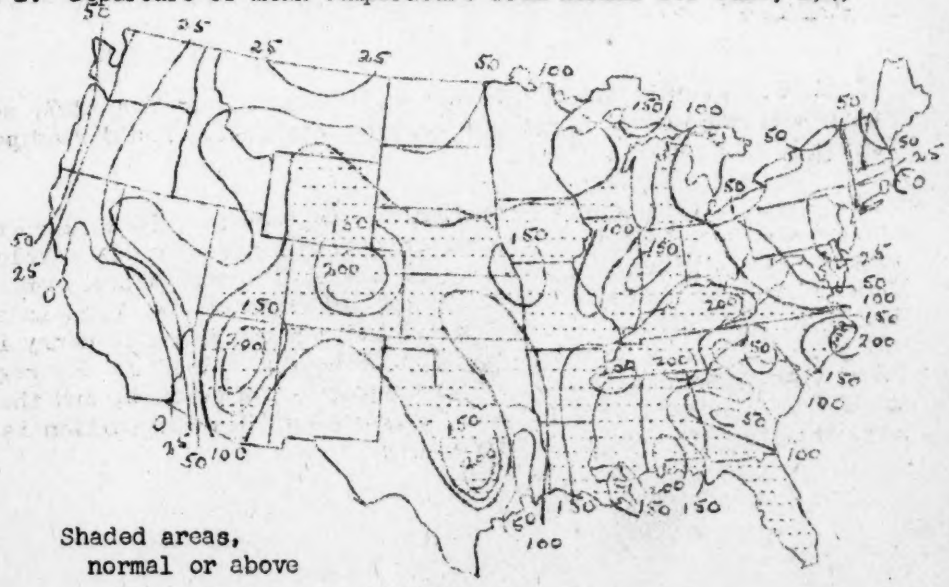
Walter H. Snell writes, "I have a correction of an item in 'Two Unusual Hosts' by Samuel C. Damon and myself, Plant Disease Reporter Vol. 32, No. 10, Oct. 15, 1948, page 447. We stated that the Exochorda was probably racemosa (Lindl.) Rehd. The species should be E. Geraldii Hesse."

In E. E. Wilson's article in the July 15 issue, on page 287, second paragraph, the end of the third sentence obviously should read petroleum oil, not soil as given.

The Shell Company calls attention to the fact that it is incorrect to use the term "DD" in the sense of a common name for the dichloropropane and propene fumigants, as it was used in the article on "Promising Treatments for Controlling Root Disease and Weeds in a Southern Pine Nursery," by Ralph M. Lindgren and Berch W. Henry in the May 15 issue of the Reporter (pp. 228-231). "D-D" is the registered trademark name for the Shell Company's own product, and the use of "DD" as a common term for all fumigants of this composition is injurious to this Company's interests.



Map I. Departure of mean temperature from normal for June, 1949



Map II. Percentage of normal precipitation for June, 1949

JUNE WEATHER

(From U.S. Department of Commerce, Weather Bureau, Weekly Weather and Crop Bulletin for the week ending July 5, 1949